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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/696,071

10/28/2003

Takami Eguchi

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CANON U.S.A. INC. INTELLECTUAL PROPERTY DIVISION  
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EXAMINER

ZHENG, JACKY X

ART UNIT

PAPER NUMBER

2625

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/696,071

Applicant(s)

EGUCHI ET AL.

Examiner

Jacky X. Zheng

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on October 28, 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on October 28, 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 7/15/2005 & 10/28/2003.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. This is the initial office action based on the application filed on October 28, 2003.

#### ***Priority***

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

#### ***Information Disclosure Statement***

3. The information disclosure statement (IDS) submitted on October 28, 2003 and July 15, 2005 were filed on and after the mailing date of the application on October 28, 2003. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

#### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claim 15 recites the limitation of "units of a predetermined number of characters". Such a limitation has not been *explicitly* depicted with sufficient descriptions in the instant claim. The scope of such a limitation is unable to be determined, which renders the claim scope indefinite. Further clarification is required.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claims 1-5, 7-8, 10-11 and 15-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Ancin (U.S. 6,731,775)** and further in view of **Wang et al. (U.S. 5,680,479)**.

**With regard to claim 1**, the claim is drawn to a method for embedding a digital watermark, comprising: a step of inputting digital watermark information (*See Ancin, i.e. claim 1, "embedding a message in a text-containing document"*); a step of inputting an image (*See Ancin, i.e. claim 1, "obtaining a pixel representation of the document"*); a step of dividing the image into a plurality of areas (*See Ancin, i.e. claim 1, "partitioning each determined text line into a plurality of blocks"*); a step of ordering the plurality of areas according to a predetermined ordering criterion; a step of embedding the digital watermark information over the plurality of areas that have been ordered and a step of outputting an image with the digital watermark information embedded therein (*See Ancin, i.e. claim 1, "identifying each block...embedding a binary element in each valid block by labeling text pixels within that block..."*).

Ancin does not explicitly disclose the limitation of "ordering the plurality of areas according to a predetermined ordering criterion".

However, Wang et al. disclose the limitation of "ordering" by disclosing the teaching of "forming a hierarchical tree based on the outlined connected component, and designated as a descendent a connected component which is within a rectangle formed around another connected

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component...which rectangles are selectably connected widthwisely based on size...” (See Wang et al. i.e. column 32, lines 1-14;).

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to have modified Ancin to include the teaching of “forming a hierarchical tree based on the outlined connected component, and designated as a descendent a connected component which is within a rectangle formed around another connected component...which rectangles are selectably connected widthwisely based on size...” taught by Wang et al. It would have been obvious to one of ordinary skill in the art at the time of invention to have modified Ancin by the teachings of Wang et al. to include the teaching of “forming a hierarchical tree based on the outlined connected component, and designated as a descendent a connected component which is within a rectangle formed around another connected component...which rectangles are selectably connected widthwisely based on size...” taught by Wang et al. to “aid in reconstructing a page from the pixel image data” (Wang et al., i.e. column 4, lines 4-5).

**With regard to claim 2** the claim is drawn to a method according to claim 1, further comprising a circumscribed-rectangle detecting step of detecting rectangles circumscribed respectively to characters included in the image, wherein the digital watermark information is embedded in the embedding step based on the circumscribed rectangles detected (See Wang et al. i.e. column 31, lines 66-67, disclose forming of an “rectangle”;

**With regard to claim 3**, the claim is drawn to a method according to claim 1, wherein the image input in the input step is a document image at least including a plurality of document areas (See *Wang et al.*, i.e. Fig. 10, illustrates “a plurality of document areas”).

**With regard to claim 4**, the claim is drawn to a method according to claim 3, wherein the plurality of document areas included in the document image is ordered in the ordering step (See *Wang et al.*, i.e. Fig. 9, Step S905 and S906, “update tree structure”).

**With regard to claim 5**, the claim is drawn to a method according to claim 4, wherein the plurality of document areas ordered in the ordering step based on sizes of the respective document areas (See *Wang et al.*, i.e. column 3, line 49 – column 4, line 5, “Before connecting, the rectangles may be classified as text or non-text units based on size of the rectangles...”).

**With regard to claim 7**, the claim is drawn to a method according to claim 5, further comprising a step of exempting a part of the plurality of document areas from ordering prior to the ordering step (See *Wang et al.*, i.e. Fig. 2 Step S204, checking the property of the block, if not a “Text Block” move on to next block or current block is “exempted” or skipped).

**With regard to claim 8**, the claim is drawn to a method according to claim 4, wherein the plurality of document areas is ordered in the ordering step based the numbers of characters included in the respective document areas (See *Ancin*, i.e. column 11, lines 9-12, identify (or classify) the blocks to be valid or not based on percentage of text pixel in the block (or area)).

**With regard to claim 10**, the claim is drawn to a method according to claim 8, further comprising a step of exempting a part of the plurality of document areas from ordering prior to the ordering step (See *Wang et al.*, i.e. Fig. 2 Step S204, checking the property of the block, if not a “Text Block” move on to next block or current block is “exempted” or skipped).

**With regard to claim 11**, the claim is drawn to a method according to claim 4, further comprising a second embedding step of embedding information representing an order of the document areas that have been ordered (*See Ancin, i.e. column 11, lines 13-16*).

**With regard to claim 15**, the claim is drawn to a method according to claim 4, wherein digital watermark information is embedded in the embedding step by units of a predetermined number of characters included in each of the document areas (*See Ancin, i.e. column 11, lines 9-12, "percentage of text pixels"*).

**With regard to claim 16**, the claim is drawn to an apparatus for embedding a digital watermark (*The claim is rejected under the same ground for at least the reasons set forth above. See the detailed discussion of the claim 1 above.*)

**With regard to claim 17**, the claim is drawn to a computer program product storing a program for embedding a digital watermark (*The claim is rejected under the same ground for at least the reasons set forth above. See the detailed discussion of the claim 16 above. Furthermore, Ancin discloses an machine-readable medium embodying a program of "embedding a message embedded in a text of a document", see i.e. claim 21*)

**With regard to claim 18**, the claim is drawn to a method for detecting a digital watermark, comprising: a step of inputting an image with digital watermark information embedded therein; a step of dividing the image into a plurality of areas; a step of ordering the plurality of areas according to a predetermined ordering criterion; a step of detecting the digital watermark information from over the plurality of areas that have been ordered; and a step of outputting the digital watermark information detected (*The claim is rejected under the same ground for at least the reasons set forth above. See the detailed discussion of the claims above.*

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Furthermore, Ancin discloses the method of “extracting a message embedded in a text of a document”, see i.e. claim 9).

**With regard to claim 19**, the claim is drawn to an apparatus for detecting a digital watermark (*The claim is rejected under the same ground for at least the reasons set forth above. See the detailed discussion of the claim 18 above. Furthermore, Ancin discloses an apparatus of “extracting a message embedded in a text of a document”, see i.e. claim 18).*

**With regard to claim 20**, the claim is drawn to a computer program product storing a program for detecting a digital watermark (*The claim is rejected under the same ground for at least the reasons set forth above. See the detailed discussion of the claim 18 above. Furthermore, Ancin discloses a machine-readable medium embodying a program of “extracting a message embedded in a text of a document”, see i.e. claim 29).*

9. **Claims 6 and 9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ancin and Wang et al. further in view of Acharya et al. (U.S. Pub No. 2002/00980107 A1).

**With regard to claims 6 and 9**, the teachings of Ancin and Wang et al. do not *explicitly* disclose the limitation of “ordering step based on a relationship of relative position”.

However, Acharya et al. disclose the limitation by disclosing an invention relates to a method of encoding a watermark into a digital image, more specifically disclose the process of arranging the block by Variance in Block 14 and Fig. 1 and further arrange (or order) selected blocks by location as illustrated in Block 18 of Fig. 1 (*Also see Acharya et al., i.e. Paragraphs [0018]- [0021]*).



Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to have modified the teachings of Ancin and Wang et al. to include the limitation of “ordering step based on a relationship of relative position” taught by Acharya et al. It would have been obvious to one of ordinary skill in the art at the time of invention to have modified the teachings of Ancin and Wang et al. by the teachings of Acharya et al. to include the limitation of “ordering step based on a relationship of relative position” taught by Acharya et al. to “ensure robustness (*see Acharya et al., i.e. Paragraph [0023]*).

10. **Claims 12-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ancin and Wang et al. further in view of Ameline et al. (U.S. 7,139,444).

**With regard to claims 12, 13 and 14**, the teachings of Ancin and Wang et al. do not *explicitly* disclose the limitation of embedding one bit or a predetermined number of bits by rotating a character as recited in claims 12 and 13, also adjust a gap between characters (or space) as recited in claim 14.

However, Ameline et al. disclose the limitation by disclosing an invention relates to a method for apply a digital watermark to an output image from a computer program, further disclosing “the attribute of watermark include, for example, font type, x-dimension size, y-dimension size, rotation, text spacing, line spacing, opacity, and color....” (*see Ameline et al., i.e. column 6, lines 44-53*).

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to have modified the teachings of Ancin and Wang et al. to include the limitation of embedding one bit or a predetermined number of bits by rotating a character as recited in claims

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12 and 13, also adjust a gap between characters (or space) as recited in claim 14 taught by Ameline et al. It would have been obvious to one of ordinary skill in the art at the time of invention to have modified the teachings of Ancin and Wang et al. by the teachings of the teachings of Ancin and Wang et al. to include the limitation of embedding one bit or a predetermined number of bits by rotating a character as recited in claims 12 and 13, also adjust a gap between characters (or space) as recited in claim 14 taught by Ameline et al. It would have been obvious to one of ordinary skill in the art to utilize one of the watermark attributes mentioned above in embedding of “messages” or information without dramatically changing the original content of the document, and also “increase difficulty in removing the digital watermark from the output imaging” (see Ameline et al., i.e. column 2, lines 52-61).

### ***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- A. Rhoads (U.S. Patent No. 7,054,465) disclose a data hiding method and system for embedding and extracting information in signals.
- B. Brassil et al. (U.S. Patent No. 6,086,706) disclose a document copying deterrent method, specifically using line-shift coding and word-shift coding.
- C. Abe (U.S. Patent No. 6,580,804) discloses pixel-based digital watermarks located near edges of an image.
- D. Carro et al. (U.S. Pub. No. 2002/0013794 A1) disclose a method and system of marking a text document with a pattern of extra blanks for authentication.

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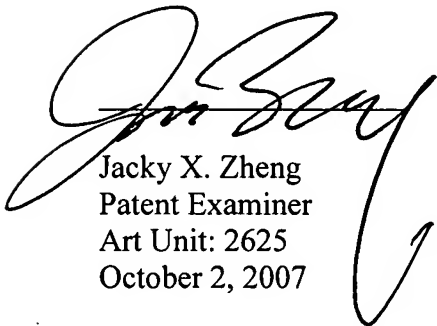
- E. Wang et al. (U.S. Patent No. 5,854,853) disclose a method and apparatus for selecting blocks of image data from image data having both horizontal and vertically oriented blocks.
- F. Wang et al. (U.S. Patent No. 5,680,478) disclose a method and apparatus for character recognition.
- G. Rhoads (U.S. Patent No. 6,879,701) discloses a tile-based digital watermarking techniques.
- H. Tamaru (U.S. Pub. No. 2003/0149936 A1, Canon) discloses a digital watermark embedding apparatus for document, digital watermark extraction apparatus for document and their control method.
- I. Iwamura (U.S. Pub. No. 2002/0104003 A1, Canon) discloses a digital watermark processing apparatus, and digital contents distribution system using the apparatus.
- J. Horino et al. (U.S. Patent No. 5,861,619) disclose a method and apparatus for embedding data into an electronic document by modulating spaces between words.
- K. Hayashi (U.S. Pub. No. 2003/0128863, Canon) discloses an information processing device and method for processing picture data and digital watermark information.
- L. Ray et al. (U.S. Pub. No. 2003/0235325 A1) disclose a method for securely transacting a transaction based on a transaction document.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacky X. Zheng whose telephone number is (571) 270-1122. The examiner can *normally* be reached on Monday-Friday, 7:30 a.m.-5p.m., Alt. Friday Off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Twyler M. Lamb can be reached on (571) 272-7406. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Jacky X. Zheng  
Patent Examiner  
Art Unit: 2625  
October 2, 2007



TWYLER LAMB  
SUPERVISORY PATENT EXAMINER